Claims

What is claimed is:

1. An iron chelator delivery system, comprising an iron chelator and a lipid carrier.

2. The iron chelator delivery system of claim 1, wherein the iron chelator is selected from the group consisting of Desferrioxamine, deferipone, PIH, Rhodotorulic acid, HBED, HBPD, 2,3-dihydroxybebzoic acid, DTPA, and iron chelators produced by bacterial siderophores.

3. The iron chelator delivery system of claim 1, wherein the concentration of the iron chelator is about 1μM to about 100mM.

4. The iron chelator delivery system of claim 1, wherein the lipid carrier is a liposome.

5. The iron chelator delivery system of claim 4, wherein the liposome is multilamellar or unilamellar.

6. The iron chelator system of claim 4, wherein the size of the liposome is about 10nM to about 10microns.

7. The iron chelator system of claim 1, wherein the lipid carrier further comprises cationic or anionic charge groups.

8. The iron chelator system of claim 1, wherein the lipid carrier further comprises antibodies specific to cardiac proteins, wherein the cardiac proteins are selected from the group consisting of cardiac myocyte proteins, vasculature proteins, endothelial cells, and matrix proteins.

9. The iron chelator system of claim 1, wherein the lipid carrier is tagged.

10. The iron chelator system of claim 1, wherein the lipid carrier is galactosylated or mannosylated.

11. The iron chelator system of claim 4, wherein the iron chelator is encapsulated between the liposome lamellae or intercalated within the lamellae.

12. The iron chelator system of claim 4, wherein the iron chelator is encapsulated within the central cavity of the liposome.

13. A method of preparing an iron chelator delivery system, comprising the steps of

(a) combining a liposome with an iron chelator; and

(b) extracting the iron chelator-encapsulated liposomes to form an iron chelator delivery system.

14. A method of preparing an iron chelator delivery system, comprising the steps of

(a) dissolving phosphatidyl choline (PC) and cholesterol (Ch) in chloroform ($CHCl_3$) to form an aqueous phase and an organic phase;

(b) adding iron chelator to the aqueous phase;

(c) vortexing the aqueous and organic phases;

(d) evaporating the organic phase under a partial vacuum to form iron chelator-encapsulated liposomes;

(e) extruding the liposomes through membrane filters;

(f) removing the non-encapsulated iron chelator by centrifugation; and

(g) extracting the iron chelator-encapsulated liposomes to form an iron chelator delivery system.

15. The method according to claim 13, wherein the iron chelator is selected from the group consisting of Desferrioxamine, Deferipone, PIH, Rhodotorulic acid, HBED, HBPD, 2,3-dihydroxybebzoic acid, DTPA, and iron chelators produced by bacterial siderophores.

16. A method of preparing an iron chelator delivery system, comprising the steps of

(a) drying a mixture of phosphatidyl choline (PC) and cholesterol (Ch) in $CHCl_3$ and vacuum desiccated to form liposomes;

(b) hydrating the liposomes by adding a solution of iron-chelator;

(c) vortexing the solution to form iron chelator-encapsulated liposomes;

(d) extruding the liposomes through membrane filters

(e) dialyzing the liposomes to purify the iron chelator-encapsulated liposomes thereby forming the iron chelator delivery system.

17. The method according to claim 16, wherein the iron chelator is selected from the group consisting of Desferrioxamine, deferipone, PIH, Rhodotorulic acid, HBED, HBPD, 2,3-dihydroxybebzoic acid, DTPA, and iron chelators produced by bacterial siderophores.

18. A method of treating iron-overload in a mammal in need of treatment, comprising administering to the mammal an iron chelator delivery system comprising an iron chelator and a lipid carrier so that treatment occurs.

19. The method according to claim 18, wherein the iron chelator is selected from the group consisting of Desferrioxamine, deferipone, PIH, Rhodotorulic acid, HBED, HBPD, 2,3-dihydroxybebzoic acid, DTPA, and iron chelators produced by bacterial siderophores.

20. The method according to claim 18, wherein the wherein the concentration of the iron chelator is about 1μM to about 100mM.

21. The method according to claim 18, wherein the lipid carrier is a liposome.

22. The method according to claim 21, wherein the size of the liposome is about 10nm to about 10 microns.

23. The method according to claim 18, wherein the lipid carrier further comprises cationic or anionic charge groups.

The lipid carrier/liposomes of Group I can be used to chelate metals other than iron - used to treat cases of metal poisoning

24. The method according to claim 18, wherein the lipid carrier further comprises antibodies specific for cardiac proteins, wherein the proteins are selected from the group consisting of cardiac myocyte proteins, vasculature proteins, endothelial cells, and matrix proteins.

25. The method according to claim 18, wherein the lipid carrier is tagged.

26. The method of claim 18, wherein the iron chelator delivery system is administered by injection into the venous circulation.

27. The method according to claim 18, wherein the lipid carrier is galactosylated or mannosylated.

28. The method according to claim 18, wherein prior to administration the iron chelator drug delivery system is dissolved in a pharmaceutically acceptable carrier.

29. A method of treating iron-overload in a mammal in need of treatment, comprising administering to the mammal an iron chelator delivery system comprising iron chelator and a liposome so that treatment occurs, wherein the concentration of the iron chelator is about 1μM to about 100mM, the size of the liposome is about 10nM to about 10 microns, the liposome is dissolved in a pharmaceutically acceptable excipient prior to administration, and the liposome is administered for about 20 to about 30 minutes.